

JOHN DAY RIVER SUB-BASIN FISH HABITAT ENHANCEMENT PROJECT

1998 Annual Report

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ABSTRACT

During 1998, three new projects were completed improving 1.8 miles of stream and riparian habitat. Protection for these reaches required the construction of 3.2 miles of riparian fence and 7 livestock water gaps. A previously leased property on the Mainstem was converted from a riparian pasture to a corridor fence after no significant recovery had occurred. 1,000 pounds of grass seed was planted for re-vegetating ground disturbed during new construction and repairs. Stream temperatures were monitored on Cottonwood Creek and the Middle Fork of the John Day. All project fences, watergaps, spring developments and plantings were checked and repairs performed where needed. We now have 61.0 miles of stream protected using 99.0 miles of fence.

INTRODUCTION

This project, initiated July 1, 1984, under Bonneville Power Administration (BPA) contract number DE A179-84 BP17460 allows for initial landowner contacts, agreement development, project design, budgeting, and implementation for an anadromous fish habitat improvement program on privately owned lands within the John Day Basin.

The purpose of the John Day Fish Habitat Enhancement Program is to enhance production of indigenous wild stocks of spring Chinook and summer steelhead within the sub-basin through habitat protection, enhancement and fish passage improvement. The John Day River system supports the largest remaining wild runs of spring Chinook salmon and summer steelhead in northeast Oregon.

DESCRIPTION OF PROJECT AREA

The John Day River drains 8,010 square miles of land in east central Oregon and is the third largest drainage in the state (Figure 1). The sub-basin includes a major part of Gilliam, Grant, and Wheeler counties and portions of Crook, Harney, Jefferson, Morrow, Sherman, Umatilla, Union, and Wasco counties.

The Mainstem John Day River flows 284 miles from its source in the Strawberry Mountains to its confluence with the Columbia River just upstream of the John Day Dam. The largest tributary, the North Fork, enters the Mainstem John Day River at Kimberly (RM 184) and extends 112 miles to its headwaters in the Elkhorn Mountains near the town of Granite. The Middle Fork John Day River originates just south of the headwaters of the North Fork and flows roughly parallel to it for 75 miles until they merge at RM 31 of the North Fork. The South Fork originates from Snow Mountain near the town of Burns and drains the south side of the Aldrich Mountains. It flows into the Mainstem near the town of Dayville at RM 212.

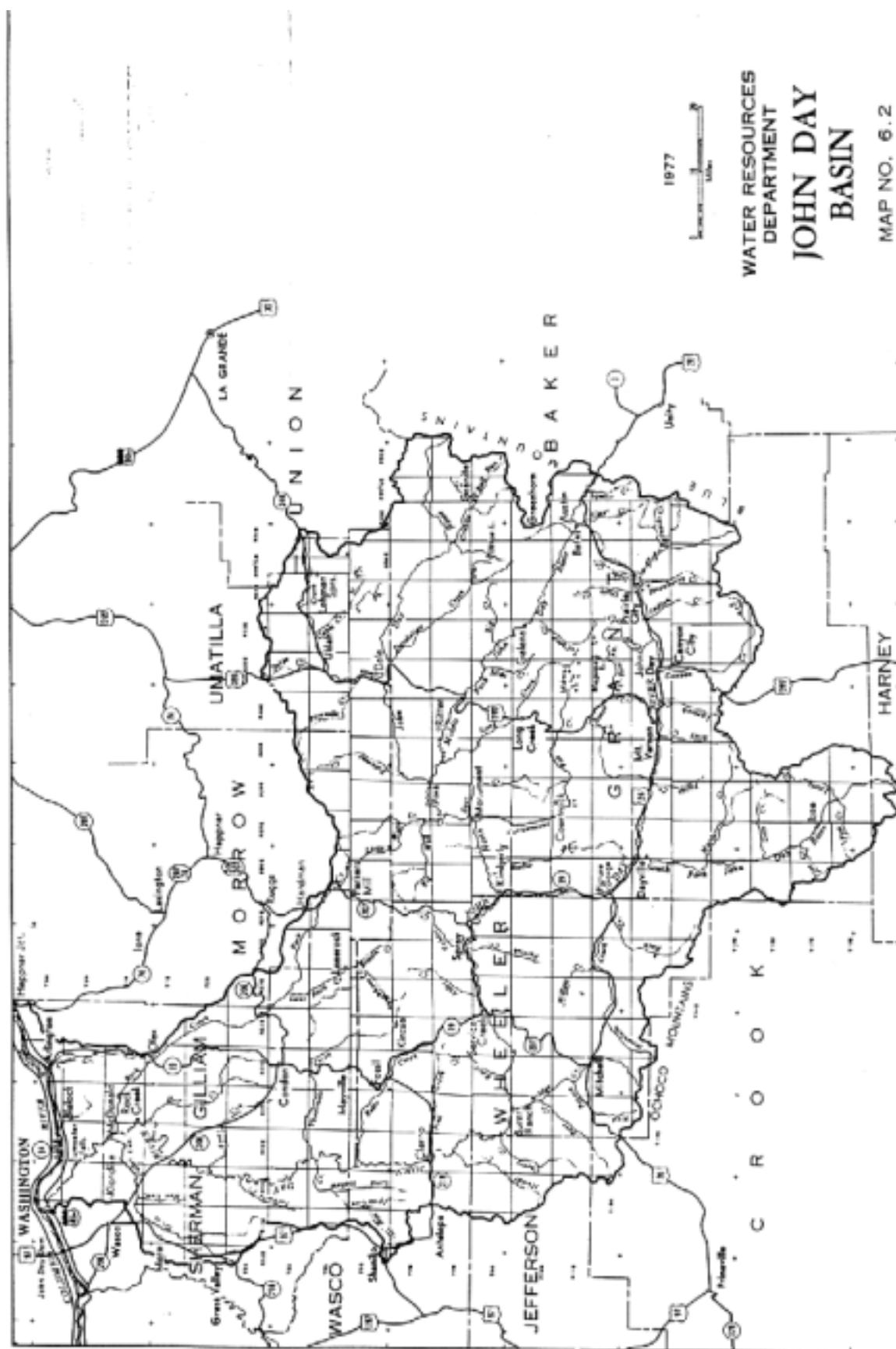


Figure 1

HISTORICAL SUMMARY

Although several areas of Oregon and the Pacific Northwest were claimed by settlers and had begun agricultural development by the year 1862, the John Day basin was still considered a wilderness, largely uninfluenced by emigrants.

The Canyon Creek gold strike of 1862 began a series of changes within the basin. Almost immediately 5,000 new people began sluicing gravel, homesteading the creek bottoms and raising livestock to feed and finance their new found homes. Stream bottoms were cleared and planted to hay or grain, and stream courses were channelized and diverted for irrigation (Oliver 1962).

By the 1930's the drainage had gone through a major vegetative change. The "waving seas of grass" in the foothills were replaced with bitterbrush, sage, cheatgrass and juniper; and the cottonwood, thornbrush (hawthorn) stream bottoms were replaced with cultivated hay and grain fields.

Fish populations were apparently greater around the turn of the century. Mr. Irving B. Hazeltine, who later became the Oregon Fish Commission's District Game Warden, reported counting 82 "silver salmon" going over a riffle in less than an hour on the Mainstem near the town of John Day one September afternoon around 1905. He went on to say that a dam constructed in the early 1900's, near the town of Spray (RM 177), wiped out the fall migrating silvers. He reported the dam was constructed with a useless fish ladder and that it contributed to heavy poaching losses. The steelhead would begin going over the dam in March and the Chinook in early June. All summer or fall migrations were blocked due to lower water and poaching. Fortunately this dam was washed out in 1934 and was never rebuilt. Many more small irrigation dams on the Mainstem and tributaries have been erected during the summer and fall months since this time. These dams have severely restricted late summer adult migrations and even seasonal juvenile migrations (Hazeltine 1954).

Extensive large-scale gold dredging then occurred in the 1940's and 1950's. Six miles of the Mainstem and 4½ miles of the Middle Fork were overturned. The North Fork and a major tributary, Granite Creek, were dredged for a total of 28½ miles during this period. The dredges operated during the summer and fall, silting the water for months at a time. They overturned spawning beds, totally altered stream channels and destroyed all riparian vegetation. Many of these areas have never recovered.

These major habitat alterations have left the John Day River in its present state. Steelhead redd counts average 2.1 reds per mile with a spawner escapement of 6,313 adults. Spring Chinook salmon redd counts average 10.7 reds per mile with a spawner escapement of 2,500 adults. These are averages for the last 5 years.

More passage constrictions occur in the lower Columbia River; the John Day, The Dalles, and Bonneville dams all affect both downstream and upstream migrations.

Some improvement to fish production potential have occurred. These include screening and bypass facilities on all irrigation withdrawals, some livestock control, fish habitat enhancement and the removal of some fish migration barriers. Much remains to be done, however, to return the John Day to an ideal level of production, approaching its turn of the century condition. This is the challenge of our program.

Funding for this endeavor is provided by the Bonneville Power Administration under contract number DE A 179-84 BP17460. This funding provides for landowner coordination, stream habitat inventory, planning and design work, contract development, budgeting, fish passage improvement, fence construction, instream habitat placement, vegetation enhancement, construction review and maintenance. These activities are for anadromous fish habitat improvement on private lands within the John Day Basin. This program is coordinated with other fish habitat improvement programs on BLM and Forest Service lands within the basin.

Specific areas that were added to the project during FY 1998 were: 1.3 miles of Indian Creek, a Mainstem tributary originating in the Strawberry Mountain wilderness, 0.5 miles of Grub Creek, another Mainstem tributary east of the town of John Day and 2.0 miles of the Mainstem John Day River.

METHODS AND MATERIALS

The overall project goal is to rehabilitate and improve anadromous fish spawning and rearing habitat thereby contributing to the Northwest Power Planning Council's interim goal of doubling anadromous fish runs in the Columbia River Basin. The quality and quantity of instream and riparian cover is severely reduced in many John Day basin streams (CTUIR 1984, Stuart & others 1987, OWRD 1992). This condition will be directly improved utilizing three complementary approaches: 1) fencing riparian areas, 2) constructing instream structures, and 3) planting stream side vegetation. These methods have proven effective in restoring stream habitat condition when properly applied.

Streams requiring rehabilitation in the John Day basin were first prioritized in 1983 and again in 1987 by ODFW biologists in cooperation with the United States Forest Service (USFS), the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) and the Grant County Soil and Water Conservation District (GSWCD). Problem identification was based on previous habitat evaluations in the basin and field biologist's knowledge of present conditions and problems. Streams were prioritized based on 1) severity of habitat degradation, 2) location within the basin, 3) fish species present, 4) landowner acceptance and cooperation, 5) ongoing habitat improvement projects in the area, 6) anticipated fish benefits, and 7) logistical constraints.

In 1996, we modified the program direction. More emphasis is now placed on encouraging landowners to build and maintain their own riparian fences. This is accomplished by providing fence materials, assisting with fence layout, assisting with initial construction and giving technical advice. Project personnel continue to lease and build fences on high priority streams if landowners will not build them. Personnel will also continue to maintain project fences under leases that stipulate such.

Beginning in 1993 the ODFW Fish Habitat Enhancement Program was broken down into four main activities: Implementation, Operation and Maintenance (O&M), Monitoring and Evaluation (M&E) and Interagency Coordination and Education (IC&E). The following are descriptions of each of these activities.

IMPLEMENTATION

All implementation activities will be accomplished in two phases: prework and on site implementation.

Pework

This is the most time consuming and important of the two phases because it lays the foundation for all implementation activities. Pework activities include the following four stages:

1. Riparian Lease Development and Procurement. This activity entails working closely with landowners to develop riparian leases or cooperative agreements that satisfy both the needs of the landowner and the objectives of the BPA habitat enhancement program.
2. Project Planning. Project planning includes design and layout of all work to be done on site, development of contract specifications, contract development for proposed work, and obtaining the necessary work permits.
3. Project Preparation. This activity includes locating sites for all structural improvements, surveying, and staking proposed work areas.
4. Field Inventories. This activity includes walk-through surveys to evaluate current instream and riparian conditions.

Duties within the prework phase are divided between ODFW and GSWCD personnel. It is the responsibility of the GSWCD to assist with all four stages of prework activities including preparation of draft leases, initial landowner contacts, contract documents and materials procurement specifications. Lease negotiations with the landowners is a shared responsibility between GSWCD and ODFW. The ODFW is responsible for working with the GSWCD and for reviewing/editing all draft documents prior to final document preparation. Additionally, the ODFW provides biological oversight on all projects.

On site Implementation

The second phase, on site implementation, involves on-the-ground construction. On site implementation activities are the primary responsibility of ODFW with technical oversight being provided by GSWCD. All on site implementation activities fall into five major categories:

1. Instream structures Instream structures are installed at locations predetermined by project personnel to address limiting factors in each stream reach. Instream structures are constructed in late summer and early fall. Logs, boulders and large organic debris (LOD) are used to create pools and habitat diversity. Rock jetties and riprap are used to stabilize stream banks and protect riparian fences. Bioengineering techniques and rock structures are used to expedite stream bank re-vegetation.
2. Planting Vegetative plantings consist of trees, shrubs and grasses. Areas that have ample native vegetative stock are not planted. All sites disturbed during construction activities are planted with grasses.
3. Fencing In order to meet the riparian recovery objectives discussed in the John Day River Fish Habitat Improvement Implementation Plan, riparian enclosure fencing is constructed to protect vegetation from livestock. Fencing is constructed in areas where riparian damage has occurred or is a potential in the future.
4. Off-site water developments In an attempt to reduce the number of watergaps in riparian fences (thereby reducing fence construction and maintenance costs), and to encourage livestock utilization of pastures away from riparian areas, off site water sources are developed.
5. Photopoint establishment Photopoint establishment includes locating and placing permanent markers at sites from which photographs can be taken at regular intervals, thereby depicting riparian changes through time. Also associated with photopoint establishment is the development of a photopoint notebook for each project area.
6. Miscellaneous Field Activities Many additional activities may be required to complete a fish habitat improvement project.

OPERATIONS AND MAINTENANCE (O&M)

Operation and maintenance are defined by the Bonneville Power Administration as follows:

"Operations is the act of running equipment or facilities to produce a specific product or service. Operations includes both the fixed and variable costs of such activities..."

"Maintenance consists of the activities and materials necessary to keep equipment, roads, fences and buildings in good working order. Maintenance involves either routine, preventative, servicing or repair and replacement of defective or wearing parts or equipment, structures, roads, fences, etc. ..."

Operation and maintenance activities begin on all project areas no later than the year immediately following completion of on-site implementation activities. Predominate maintenance activities include, but are not limited to, maintenance of riparian fences, maintenance and/or retrofitting of instream structures and re-vegetating key riparian areas.

Maintenance activities are the primary responsibility of the ODFW, who will inspect completed project areas and plan, implement and evaluate needed maintenance activities; the GSWCD provides technical support.

1. Fencing Following completion of implementation a biannual inspection of all project fences is made. Following these inspections all fence maintenance is done. Stream cross fences and/or watergap cross fences are either put in or removed during these inspections or subsequent maintenance.
2. Instream Following completion of implementation an annual inspection of project instream structures are made. Following these inspections, any structures found failing to protect the riparian fence line, valuable meadows or buildings are documented for maintenance funds. This documentation includes photographs, site plans and estimated costs. If maintenance funds are obtained then repairs are performed the following year.
3. Re-vegetation Following completion of implementation some sites require additional plantings of grasses, shrubs or trees. This may be done in subsequent years after soil changes have occurred. This is done to insure the quickest vegetative recovery possible on each site.
4. Miscellaneous Cooperator sign boards denoting riparian enhancement projects as cooperative efforts between BPA, ODFW and private landowners will be installed at high visibility sites along completed riparian enhancement project areas.

MONITORING AND EVALUATION (M&E)

To monitor the progress of this program it is necessary to evaluate the physical condition of the streams and riparian habitat prior to, during, and upon completion of on site implementation in each project area. Additionally stream temperatures are monitored using thermographs which will be located within selected project areas. The ODFW, GSWCD and Monument High School students jointly monitor and evaluate these changes as time and funding permits.

2. Photopoint Picture Taking Standardized pictures are taken from established photopoints prior to implementation on any project area and then during the spring and fall for two years immediately following completion of a project. Once these initial photos are obtained the frequency of photopoint picture taking may diminish to once every two to three years.
3. Habitat Monitoring Transect Establishment Within selected project areas permanent habitat monitoring transects are established. Specific measurements will then be taken along each transect. These measurements are repeated at regular intervals and compared with original measurements as a means of quantitatively measuring environmental changes through time.
4. Habitat Monitoring Transect Data Immediately after establishing habitat monitoring transects, baseline data is collected. Data collection, following the establishment of baseline data, is done on the first year following completion of implementation activities and then at approximately 3 to 5 year intervals.
5. Thermograph Data Collection and Summarization Thermographs are installed within and/or adjacent to selected project areas. These thermographs are then monitored on a regular basis to detect changes in water temperatures.
6. Miscellaneous Field Activities Steelhead redds are counted in index areas on two of our recovering streams. These counts are used to document changes in adult spawner returns to our treated areas.

Waterfowl and other bird species are counted yearly within two index areas. These counts monitor changes in bird species abundance as woody vegetation replaces grass.

Shrub and tree heights are measured on two index areas to document growth rates of each different species.

Fish populations are counted in two index areas to document change in juvenile abundance.

RESULTS AND DISCUSSIONS: I. FIELD ACTIVITIES

All implementation activities were accomplished in two phases: Prework and On site Implementation.

Prework

1. **Riparian Lease Development and Procurement** A 15 year lease was signed with the Kuhl Ranch on 1.3 miles of Indian Creek. A 10 year fencing agreement was signed with Chet Hettinga on 0.5 miles of the Mainstem. A 10 year fencing agreement was signed with Monte Burmeister on 6 miles of the East Fork of Thirtymile Creek.

Coordination continued with Carter Kerns for leasing 1.3 miles of Granite Creek.

Coordination was initiated for leasing 1 mile of Snipe Creek on the Pendleton Ranches property.

Coordination was initiated for leasing 2 miles of Indian Creek on the Oxbow, Ray and Winegar properties.

Coordination was initiated for leasing 4 miles of Long Creek on the Martin property.

Coordination was initiated for leasing 4 miles of Willow, Six-shooter and Fopiano Creeks on the Hettinga and Collins properties.

2. **Project Planning** Plans and designs were initiated for leveling dredge tailings on Granite Creek to be completed in 1999.

A grant proposal was submitted and \$1,900 was awarded from the State of Oregon's Restoration and Enhancement Board (R&E) and used for the Grub Creek/McNeil fence project.

A grant proposal was submitted and \$3,800 was awarded from R&E for the Mainstem/Hettinga fence project.

Plans were finalized for fencing one mile of the South Fork of Murderers Creek.

Plans and design were initiated for fence construction on the Pendleton Ranches/Snipe Creek property.

Plans and designs were initiated for the Indian Creek/Oxbow, Winegar properties.

Instream work permits were applied for and obtained for the Mainstem/Carter and Indian Creek/Kuhl properties.

Contracts for fence and watergap materials delivery were written, announced and awarded by ODFW.

Fence and instream construction contracts, specifications and project site maps were written and awarded by GSWCD.

3. **Project Preparation** Fence construction materials were received by ODFW and stored in the materials storage yard.

All 1998 construction sites were staked and flagged for the contractors.

A pre-bid tour was conducted for the Carter and Kuhl fence construction contracts. Eight contractors attended the tour. Both contracts were awarded to Mark Webb of John Day. Notice to proceed was given on June 8th.

The Mainstem/Carter spring development and watergap construction contract was awarded to Bezona Construction of John Day. Notice to proceed was given on June 29th.

The Indian Creek/Kuhl watergap construction contract was also awarded to Bezona Construction of John Day. Notice to proceed was given on June 29th.

On site Implementation

1. **Fencing** One mile of fence materials were given to Chet Hettinga for constructing a riparian fence to protect one mile of the Mainstem near Dayville. He completed the fence in June.

One mile of fence materials were given to Monte Burmeister for constructing a riparian fence to protect one half mile of the east fork of Thirtymile Creek near Fossil. He completed the fence in June.

The Mainstem/Carter fence construction contract began on June 8th and was completed on August 30th. Totals were:

4.09 miles of new barbed wire fence
1.92 miles of fence removal
14 gates
3 stream crossings
\$21,238.13 Total cost

The Indian Creek/Kuhl fence construction contract began on August 24th and was completed on October 13th. Totals were:

2.68 miles of new barbed wire fence
0.18 miles of fence removal
4 gates
7 water gaps
\$15,242.16 Total cost

One half mile of fence materials were given to Bill McNeil who constructed a riparian fence protecting 0.75 mile Grub Creek a Mainstem tributary near the town of John Day. He completed the fence in August and he will maintain it.

Two miles of fence materials were given to Tom Thomsen who constructed a riparian fence protecting 1.5 miles Dry Creek a Mainstem tributary near the town of Mt.Vernon. He completed the fence in October and he will maintain it.

Two miles of fence materials were given to the Malheur National Forest for fencing 1.0 mile of the South Fork of Murderers Creek a South Fork tributary. They completed the fence in October and will maintain it.

2. **Off site Water Developments** Two off site water developments were constructed on the Mainstem/Carter property. These were solar pumps installed in shallow wells to lure livestock away from our riparian fences.

A solar well was constructed on the Johns/Fox Creek property to eliminate a problem watergap. The landowner provided a backhoe and project personnel performed the construction.

3. **Instream Structures** The Kuhl watergap construction contract began on July 16 and was completed on July 22. Totals were:

257 Boulders placed
140 yd3 placed
0.5 hours of equipment rental
\$6629.50 Total cost

The Carter watergap construction contract began on July 23 and was completed on July 27. Totals were:

46 Boulders placed
440 yd3 placed
0.5 hours of equipment rental
\$9987.00 Total cost

4. **Planting** 200 lb. of grass seed was spread over areas disturbed during construction on the Carter and Kuhl properties. 20 plum trees were planted on the Cummings Creek/Potter property.
5. **Photopoint Establishment** Twelve photopoints were established on the Kuhl/Indian Creek property to show pre-construction conditions.
6. **Miscellaneous Field Activities** All 1998 construction activities were summarized and reported to the ODFW Regional Habitat Coordinator.

Table 1. New project implementation completed in 1997.

Stream - Landowner -	Mainstem Carter	Indian Creek Kuhl
Stream length	2.0 mi.	1.3 mi.
Fence construction	4.09 mi.	2.68 mi.
Fence removal	1.92 mi.	0.18 mi.
Gates	17	4
Livestock watergaps	-	7
Stream crossing fences	3	-
Instream structures	46	257
Off site water developments	2	-
Photopoints established	-	12

OPERATIONS AND MAINTENANCE (O&M)

We began the year with a moderate snow pack in the mountains. The snow pack gradually melted off in the spring. Frequent precipitation continued through mid summer resulting in good grass growth and stream flows throughout the basin. In mid July precipitation ended and temperatures stayed near 100° for 6 weeks. However, livestock pressure on our fences and watergaps this summer was only moderate because of good grass and water volumes. Cattle were found within our fences on 9 occasions from July 15 to October 31.

1. Fencing Lonnie Goin Jr. was hired as our fence maintenance technician on Feb. 9. He walked all project fences and corrected deficiencies as they were encountered. He continued with fence maintenance duties until November 30.

Fences on the Mainstem/McNeil property were inventoried for rotted fence posts. Eight were found and replaced. Five trees were removed from the fence and other minor repairs were made where needed.

Four extra posts were added to relocate the smooth wire fence on the Carter/Long Creek property to avoid an eroding bank.

The upper stream crossing and a corner structure on the Tuttle/Canyon Creek fence were replaced after high water washed them out.

A spring development trough on the McNeil/Mainstem property began to leak from rust after 9 years and was replaced.

The Mainstem/Fields fence was relocated to enclose a new irrigation dam and headgate.

18 fence corner structures were replaced on the Brown/Mountain Creek property. These structures failed due to high tensile wire pulling them over during wet soil conditions.

Three trees were removed and three H-braces were replaced on the Cottonwood/Bahrenburg fence.

Fifty feet of fence was repaired on the Fox Creek/Johns property after a herd of elk ran through it.

One quarter mile of fence on the Mainstem/Holmstrom property was replaced with treated fence posts after the original ones rotted.

Leaking pipes on a spring development were repaired on the Fox Creek/Johns property.

Fifty two rotted railroad ties were replaced with treated posts on the Fox Creek/McGirr property.

Two new solar pump watering stations were installed on the Fox Creek/Johns property to eliminate the use of two watergaps.

Bids were received and a flight services contract was awarded in May to Mr. Bill Kraye of John Day. Exclosure inspection flights were taken once per week beginning in July 15 and ending in October when the weather became unsuitable for flying. Trespass cattle were found on 9 occasions and removed.

After most pastures had been retired for the winter we removed our watergaps, solar pumps and stream cross fences. Where livestock were still present we lifted the cross fences above spring floodwater levels.

2. **Instream** Three windfall trees were cabled instream on the McNeil/Mainstem property.
3. **Re-vegetation** 25 Aspen rooted cuttings were planted and caged within our spring development exclosures on Fox Creek.

15 Aspen rooted cuttings were planted and caged within our riparian exclosures on Canyon Creek.

All areas disturbed as a result of last years floods required 600 lb. of grass seed.

Noxious weeds were sprayed on the McGirr and Johns properties on Fox Creek and the Jacobs, Emmel, Fields, Carter, McNeil and Holmstrom properties on the Mainstem.

4. **Miscellaneous field activities** Steelhead passage was checked over beaver dams on Fox Creek. The fish ladder on Deer Creek was checked in March and found to be operating as designed. The fish ladder on Fivemile Creek lost one of its three weirs during the January 1997 flood. Repairs were not made this year because the access road to this ladder was also washed out. It is not certain if the access road will be rebuilt. A steelhead redd count showed 4 redds above the ladder, so some passage is occurring for adults. The ladder remains a passage barrier to juvenile fish. We will continue to monitor passage and wait for road access to become available.

MONITORING AND EVALUATION (M&E)

1. **Photopoint Picture Taking** Photopoints were retaken on the Holmstrom, McNeil, Moeller and Brown Properties. All pictures were developed, duplicated, labeled and filed.

2. **Thermograph Data Collection and Summarization** It has been reported that the upper lethal limit for Chinook salmon is 26.2°C and is 23.9°C for steelhead. The preferred ranges are 12-14°C for Chinook and 10-13°C for steelhead(Meehan 1991). Salmonids are able to respond to temperature changes by moving upstream or downstream to find thermal refuges. Warming of streams, however, may concentrate salmonids into small areas where they are more susceptible to predation and it can lead to invasion by non-native species(Ebersole, et.al.,1994).

Two thermographs collected data on Cottonwood Creek this year. One was stationed above and one was stationed below our ½ mile long project area. This allowed us to record temperature changes as a result of the stream flowing through our project. Results were analyzed showing the lower thermograph had malfunctioned. A backup HOBO thermograph was deployed which obtained temperatures only until July 16. Thermographs were deployed on May 14 and recovered on November 5. Air temperature data was recorded by a thermograph at the lower site which also only obtained temperatures until July 16. No results could be obtained because of these malfunctions(Appendix A).

Five thermographs were deployed on the Nature Conservancy/Middle Fork this year. Water temperatures were recorded at the upper property boundary, the lower property boundary and in the lower end of Coyote Creek. Air temperatures were also recorded at the upper and lower property boundaries.

Results show that during July and August the TNC/Middle Fork average maximum temperature at the upper end of the property was 22.7°C. At the lower property boundary maximum temperatures averaged 23.3°C. Coyote Creek averaged 4.6° cooler than the lower boundary. Maximum air temperatures averaged 33.2°C. (Table 3)(Appendix B)

Table 3. Maximum temperature averages by year for July and August on the Middle Fork.

TNC MIDDLE FORK					
	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>
Upper bndry	25.3°	21.5°	22.5°	21.9°	22.7°
Lower bndry	24.6°	21.6°	22.9°	22.4°	23.3°
Coyote Cr.	19.4°	16.0°	-	19.8°	18.7°
Air Temp	29.7°	29.7°	34.7°	33.5°	33.2°

3. **Miscellaneous Field Activities** Bird surveys were performed on two index riparian areas during the May courtship period before nesting. Counts are made during this period to maximize our chances of indexing the birds that nest in our fenced riparian area. This year 17 species were counted on the Fox Creek/McGirr property and 37 on the Mainstem/Emmel property. (Table 4)

The Emmel property shows a significant recovery of riparian brush and trees but Fox Creek has only sedges and rushes with no brush or tree recovery. Fox Creek has an increasing number of steelhead redds (Table 5) but the bird population has not responded as well.

Table 4. Species of birds counted in two index areas between 1986 and 1996.

<u>Location</u>	<u>1986</u>	<u>1988</u>	<u>1990</u>	<u>1992</u>	<u>1994</u>	<u>1996</u>	<u>1998</u>
Fox Creek McGirr	11	23	18	20	16	14	16
Mainstem Emmel	20	24	32	33	34	40	37

Steelhead spawning ground surveys were conducted in May to obtain data by counting spawning nests (redds) visible on gravel bars after adult steelhead have spawned. In 1998 water clarity was good for redd counting. Fox Creek had 5.3 redds per mile. Steelhead counts throughout the rest of the basin averaged 1.7 redds per mile. Redd counts have risen dramatically in the last 10 years in this stream. (Table 5)

In Fivemile Creek, 4 steelhead redds were found this year. The fish ladder on this creek was damaged during the January 1997 flood. Adult steelhead passed over the ladder but juvenile steelhead and salmon cannot. We planned to repair the ladder but the access road was washed out and the landowner is not going to replace it. Plans now are to continue counting redds and see if adult Steelhead passage becomes blocked at some time in the future.(Table 5)

Table 5. Six year summary of redd counts within Project areas.

Stream	Miles	Project Type	Redds Counted					1998
			1988	1990	1992	1994	1996	
Fox Cr.	3	1987 Habitat Improvement	6	3	36	15	37	16
Fivemile	2	1987 Barrier removal	4	6	5	3	8	4

RESULTS AND DISCUSSION II. PROGRAM ADMINISTRATION

1. **Reports and Data Summaries** Quarterly progress reports and the 1997 Annual Report were submitted to BPA during 1998.

Weekly activity reports were submitted to the Program Leader.

An implementation summary was completed of all improvements made on the Carter and Kuhl properties.

All thermograph data was summarized and graphed. (Appendix A)

Bird inventories and steelhead redd counts were summarized. (Tables 4 and 5 respectively)

2. **Budgets/Purchases** The 1998/1999 work statement and budget draft for \$342,352 was prepared and submitted to BPA and approved.

The Screen shop's forklift broke down while our project was expecting several shipments of fence materials. We also had landowners coming in to pick up materials. This necessitated renting a forklift for two months at \$2000/mo. We also had to pay for half of the repairs to the old forklift at an additional \$12,671. These unanticipated costs left us short of S&S dollars for the remainder of the year.

1000 lbs of grass seed, fence hardware, 700 wood posts, 3 solar water pumping units, 17 bundles of survey stakes and 10,000 fence stays were purchased.

\$32,500 worth of construction materials for project implementation and maintenance were purchased.

Monthly purchasing summaries were submitted to the program leader throughout 1998.

3. Program Development

The 1999 Work Statement and Budget was submitted to BPA for \$380,000.

A FY 2000 project proposal was submitted to the Columbia Basin Fish and Wildlife Authority for approval.

A cooperative agreement was signed with the Grant County Soil and Water Conservation District for providing 3 months of construction contract administration.

A tour of the project was given for Phil Havens showing him the new 1998 construction and how previous project areas are recovering.

An "Umbrella" proposal for the entire basin was prepared by Tim Unterwegner, district fish biologist, and submitted to CBFWA.

4. Personnel Lonnie Goin Jr. was hired as the seasonal fence maintenance technician on Feb. 4 and continued the maintenance duties until the 28th of November.

Tim Bailey of Pendleton assumed the duties of Regional Fish Habitat Coordinator on July 1. He was given a tour of the project in August.

Monthly safety meetings were attended by all program personnel.

Merit ratings, updated position descriptions and work plans were written for the biologist, technician and seasonal fence maintenance technician.

Training seminars attended were: monthly safety meetings, a regional safety officer's meeting, the annual American Fisheries Society meeting and the ODFW NE region conference in Richland.

5. Contract Administration The GSWCD wrote, published, announced, awarded, administered and made payments for the Carter and Kuhl construction contracts. ODFW personnel designed, staked, procured materials for and inspected the contracts from June 4 to October 13.

An inventory of all project capital and sensitive items was performed.

INTERAGENCY COORDINATION/EDUCATION

1. Interagency Coordination A 3 month cooperative agreement was developed between ODFW and the Grant County Soil and Water Conservation District (GSWCD) for FY 1998. The agreement required the GSWCD to develop and administer the fence construction contract on the Carter/Mainstem property, the Kuhl Indian Creek property and the Kerns/Granite Creek property. Design and fund procurement activities were closely coordinated with Umatilla National Forest personnel for the Granite Creek/Kerns property.

Air and water temperature data was received from the Oregon Climatological Service, the Grant Soil and Water Conservation District and the Nature Conservancy.

The biologist met with the North fork Watershed council's new coordinator and explained how our program works. They hope to incorporate many of our techniques into their own riparian fencing program.

The biologist met with the NRCS who explained how their Conservation Reserve Program could possibly pay landowners to participate in our program. The landowner would have to commit to another lease with the NRCS but they would be eligible for payments of at least \$50 per acre per year for letting us fence their lands.

The biologist attended and provided literature for a beaver management seminar sponsored by the Grant County Conservation Club.

Two miles of fence was constructed by project personnel and the staff of the Malheur National Forest excluding one mile of the south fork of Murderers Creek. Fence layout, post driving and materials delivery were also provided by project personnel.

Plans and diagrams for solar water wells were given to the Gilliam County SWCD who plan on constructing one next summer.

Thermograph data summarization assistance was given to the project by the CTWSIR basin coordinator.

Cottonwood Creek temperature data was given to the BLM.

The biologist attended a Bureau of Land Management workshop teaching stream proper functioning and condition analysis.

2. Education

The biologist assisted a Mt. Vernon middle school student with a report she was writing on "The Salmon Crisis".

The biologist assisted a Grant Union High School student with a report and slide presentation he later gave at an Oregon Academy of Sciences competition.

The biologist coordinated a stream monitoring program for Indian Creek using 7th and 8th grade students from Blue Mountain junior high school.

The biologist spent two days at an outdoor school teaching local 6th graders about aquatic insects, trout and salmon that are found in the John Day River.

The biologist assisted with a fishing derby for kids sponsored by the Malheur National Forest.

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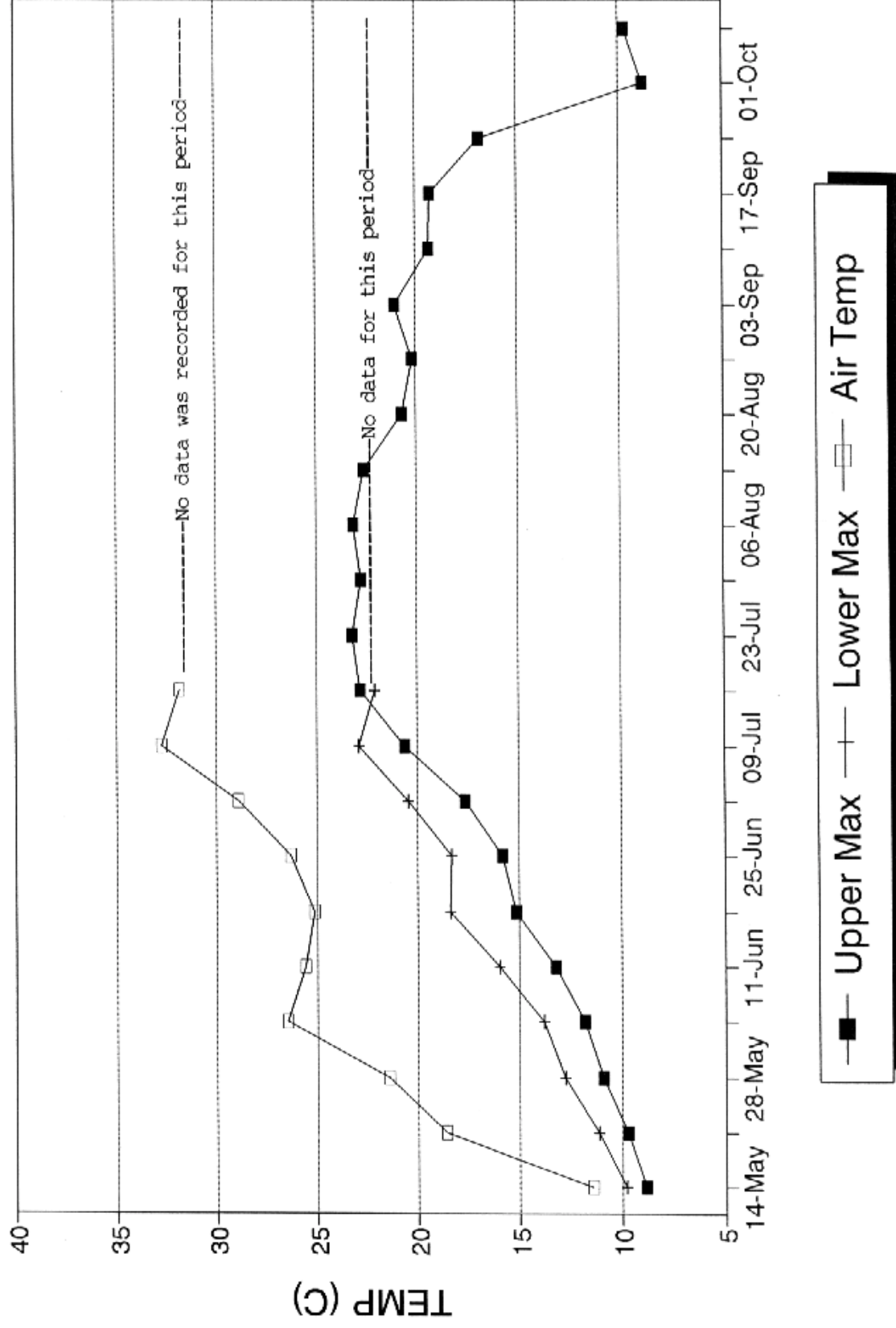
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APPENDIX A

Cottonwood Creek Thermograph Data

1998 COTTONWOOD CREEK

Ave. Weekly Maximum Water Temperatures

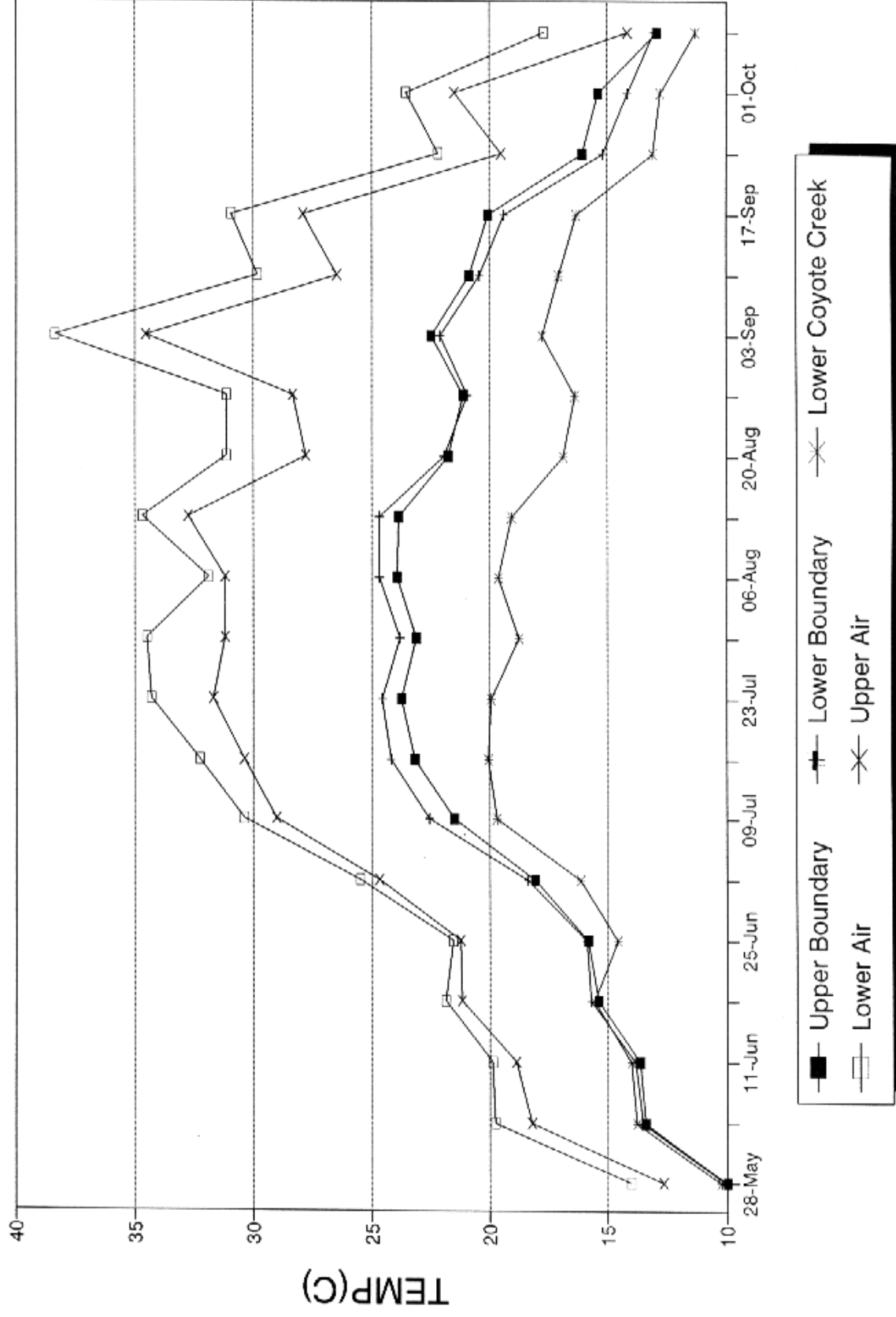


APPENDIX B

TNC Middle Fork Thermograph Data

1998 MIDDLE FORK NATURE CONSERVACY

Ave. Weekly Maximum Water Temperatures



APPENDIX C

Photographs

**MAINSTEM JOHN DAY RIVER
MCNEIL PROPERTY
ABOVE CITY OF JOHN DAY
1987 1995 1998**

In 1987 (top photograph) this section of river had a large gravel bar on the inside of the bend. Erosion from upstream would deposit here after each flood and was forcing the river further and further to the left. As the gravel bar grew erosion would eat away the opposite bank. Several tons of soil and gravel had been scoured from the right bank because there was no solid root masses to stabilize it. The only vegetation present on the stream banks was grass and weeds. Cattle would eat each year's new growth. The landowner was losing topsoil every year and fish habitat was almost nonexistent. Boulders, jetties and fence were added shortly after the top photograph was taken.

By 1995 the gravel bar had stopped moving and was collecting silt in-between the stalks of new trees. Vegetation had solidified the banks and deepened the river.

A flood in 1997 deposited more gravel on the corner, only now it raises the river level instead of eroding the opposite bank (bottom photograph). This benefits the landowner by sub-irrigating the surrounding pastures and improves fish habitat by increasing the depth of upstream pools.



AINSTEM JOHN DAY RIVER
CNEIL PROPERTY
BOVE CITY OF JOHN DAY
987 1992 1998

1987 this section of river was suffering severe bank erosion impacting the adjacent hay field.. Jetties and riprap were constructed to remedy the problem.



For the first three years reed canary grass covered the entire site but by 1992 young willow and cottonwood began to appear.



Today the reed canary grass has been reduced to the water's edge and the willow and cottonwood are growing at a rate of 2 feet per year.





MAINSTEM JOHN DAY RIVER MCNEIL PROPERTY 1988

These photos were taken looking upstream at a depositional area. They illustrate vegetation can transform stream banks from open gravel to dense forests. This not only benefits fish but wildlife also. The surrounding uplands are very open with little cover. Several wildlife species must leave the uplands and move into this forest to survive during weather extremes and raise their young in the spring.



MAINSTEM JOHN DAY RIVER MCNEIL PROPERTY 1998

**MAINSTEM JOHN DAY RIVER
HOLMSTROM PROPERTY
AT CITY OF JOHN DAY**

1986	1992	1998
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In 1985 this section was a wide, Shallow riffle with poor fish habitat. The far bank was eroding every year and in the spring, cattle would fall in and drown. Jetties and fence were added to remedy these problems.



By 1992 the vertical banks had flattened and silt had collected between the jetties.



Today the vegetation has solidified the banks and low flows are not as exposed to the sun. High water temperatures and excessive evaporation result from wide, shallow riffles and this is an example of how they can be corrected.





MAINSTEM JOHN DAY RIVER HOLMSTROM PROPERTY 1985

These photos show the amount of shade we now have on some of our project areas. Both were taken at the same site, about 1:00 in the afternoon, 13 years apart.



MAINSTEM JOHN DAY RIVER HOLMSTROM PROPERTY 1998